tunately, it didn't spread to nearby communities probably due to the high immunization coverage rate. In recent years, the numbers of workers from Southeast Asia where have only introduced rubella into vaccination programs have increased steadily. To prevent rubella in Taiwan, we suggest foreign workers should show proof of previous MMR vaccination or receive MMR vaccine before immigration.

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16.027

Historical Analysis of the 1889—1890 Pandemic in Europe

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Background: Numerous studies have investigated the 1918 pandemic ("Spanish flu") during the past years, with the implicit hypothesis that it could be a model of a possible future pandemic. By contrast very little is known on the pandemic that occurred 30 years before, in 1889—1890 (the "Russian flu").

Data, Methods: We have retrieved a report to the French Ministry of Health published in 1891 which gives the weekly death rates in 33 European cities from Russia, eastern and western Europe between November 2, 1889 and February 8, 1890. The base mortality was defined as the mean values of the 2 first and 2 last weeks for each of the 33 cities. The size and timing of the peak values were computed. The rate of the exponential burst in each city was used to compute the reproduction rate, assuming a generation time of 3 days.

Results: The spread of the pandemic was extremely rapid, with a starting point at St Petersburg (peak date = December 7. 1889). The UK and Scottish cities were hit only 6 weeks later. The mean speed of the front wave was approximately 300 Km/Week. The mean basic reproduction rate was 2.15 (range: 2.04—2.32). The mean peak value of the mortality curves was +105% above the base value (range 10%: Christiania to 221%: Brunn). The highest reproduction rates were observed at Stuttgart, St Petersburg, and Amsterdam.

Conclusion: The rapid dissemination of the influenza in the late 19th century shows unequivocally that even if feasible, the limitation of air transportation in case of a pandemic would be ineffective. The *R* values of the 1889—1890 epidemic are in line with those of the 1918 pandemic, which supports the use of R values around 2 in prospective models of the pandemic.

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Influenza B Outbreak among Influenza-Vaccinated Welfare Home Residents in Tropical Singapore

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Background: Influenza has a major impact on residents of long-term care facilities. Most outbreaks have been caused by influenza A. Very few influenza B outbreaks have been documented; most of which have been reported in temperate countries. In March 2007, an influenza B outbreak occurred among a highly immunized population in a welfare home in tropical Singapore. The study objective was to explore the clinical and laboratory features of the infection and determine the possible reason for the outbreak.

Methods: A retrospective study was conducted on staff and residents from the Home who presented with respiratory illness (RI) from 16—28 March 2007. Epidemiologic, vaccination, clinical and laboratory data were collected.

Results: Of 180 residents and 30 staff from the Home, 17 residents (clinical attack rate 9.4%) and two staff (clinical attack rate 6.7%) had RI. 13 Residents were hospitalised. Nevertheless, none of the staff need hospital admission. Most of the hospitalised residents had mild illness and were discharged within a week. However, two suffered from severe complications including lung abscess and bacteraemia respectively. All except one person from the Home were vaccinated with the trivalent influenza vaccine eight months earlier. Although all who had RI had been vaccinated, influenza B was identified in six of them. Genetic studies revealed that the strain that caused the infection was closely related to B/Houston/B720/2004, which had a 8.2% amino acid difference from the vaccine strain B/Malaysia/2506/2004.

Conclusion: The antigenic drift in the circulating influenza B strain is the probable cause of the outbreak. This outbreak underscores the importance of continual surveillance even in a highly vaccinated population. In population living in confined settings, RI surveillance plays a crucial role in early influenza outbreak detection, even in a tropical country like Singapore.

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16.029

Impact of Universal Hepatitis B Vaccination on the Prevalence of HBs and HBe Antigenemia Among Pregnant Women in Taiwan

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Background: Vertical transmission represented 40—50% of hepatitis B virus (HBV) acquisition in Taiwan, a hyperendemic area. In 1984, Taiwan implemented universal newborn HBV immunization, and routine screening for hepatitis B surface antigen (HBsAg) and hepatitis B e antigen

(HBeAg) among pregnant women. In addition, newborns born to HBeAg -positive mothers received free hepatitis B immunoglobulin (HBIG). Since then, the coverage rate of HBV vaccination and HBIG immunoprophylaxis was about 85—95%. We assessed the impact of the vaccination strategy on the seroprevalence of HBsAg and HBeAg among pregnant women in Taiwan after its implementation.

Methods: We included pregnant women aged 15—45 years who gave birth in 1995 and 2006 for the study. The screening results of serum HBsAg and HBeAg in enrolled subjects were extracted from the National Antenatal HBV Screening information system, a nationwide mandatory reporting system. The proportions of HBsAg and HBeAg positive women from the two cohorts were compared.

Results: The numbers of pregnant women enrolled for the study were 252,335 in1995, and 145,324 in 2006. The mean ages of the two cohorts were 27.7, and 28.7 years, respectively. The overall prevalence of HBsAg among pregnant women decreased from 16.3% in 1995 to 10.9% in 2006 ($p < 0.001$). The overall prevalence of HBeAg-positive subjects decreased from 4.9% in 1995 to 2.9% in 2006 ($p < 0.001$). In 1995, the prevalences of HBsAg among subjects aged 16—20, 21—25, and 26—45 were 17.4%, 17.2%, and 16.0%, respectively. In 2006, the prevalences of HBsAg among subjects aged 16—20, 21—25, and 26—45 were 3.6%, 8.2%, and 11.7%, respectively.

Conclusion: In Taiwan, the HBsAg- and HBeAg- positive rates among pregnant women significantly decreased after the implementation of HBV vaccination and immunoprophylaxis programs. By continuing the current national immunization strategy to interrupt vertical transmission, we can further decrease HBV infection in the population of Taiwan.

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16.030

Identifying Influenza Among Influenza-like Illness Cases Presented to Emergency Department of a Tertiary Hospital Over One Year Period

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Background: Influenza is a common nosocomial infection and early recognition of cases presenting to hospital is essential in preventing nosocomial transmission.

Objective: At an Australian teaching hospital, we aimed to quantify the proportion of influenza among influenza like illness cases presented to emergency department, characteristics of laboratory confirmed influenza cases and infection control issues in relation to these cases in emergency department.

Methodology: A retrospective review of all Influenza like illness cases presented to Royal Melbourne Hospital Emergency Department from 1st January 2006 to 31st December 2006 was conducted.

Results: A total of 1160 Influenza like illness patients were identified with only 13 laboratory confirmed influenza cases. Only 4.2% of Influenza like illness patients were tested for influenza. Combination symptoms of fever and cough have positive predictive value of 73% and negative predictive value of 87% for laboratory confirmed influenza. Myalgia did not correlate with a diagnosis of influenza. Majority (85%) of Influenza like illness patients received inadequate isolation in emergency department. Patients were more likely to be tested for influenza during winter season and if they had fever, underlying co-morbidity or a history of recent travel ($p < 0.05$). Decision to isolate patients were influenced by patient's age $\geq$65 years, travel history, underlying co-morbidity and presenting symptoms of fever, shortness of breath and headache.

Conclusion: This study showed influenza cases were likely under-diagnosed and rarely received adequate isolation while in the emergency department. We suggest patients presented with symptoms of fever and cough to emergency department should be put on appropriate and prompt infection control measures as well as be screened for influenza.

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16.031

Risk Factors of Mumps Outbreak in a Primary School, Bangkok, 2007

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Keywords: Mumps; MMR; Outbreak; School; Bangkok

Background: On 10th September 2007, the Bureau of Epidemiology received a report of 24 suspect mumps cases in a school. An investigation was promptly initiated with objectives to describe epidemiologic characteristics of cases, to determine risk factors and source of infection and to implement appropriate control measures.

Methods: Active case finding was performed by screening of mumps cases in School A. A suspected case was defined as any person in School A who had swelling/tenderness at one or more salivary glands between 1st August and 15th September 2007. Thirty-nine saliva and urine samples were collected and sent for viral isolation. Anti-mumps IgM antibody was tested in 55 samples. A retrospective cohort was done in 207 grade 6th students. Environmental survey of classroom, cafeterias were carried out. Univariate and multivariate analyses were performed to identify risk factors of infection.

Results: Overall attack rate was 3.0% among students and teachers in School A (57/1899). The highest attack was in 6th graders (14.61%). The median age of cases was 11 years (range 7—27 years). Common symptoms included submaxillary gland swelling, parotid gland swelling, fever,